

DTP Connectivity: Data Source Explorer

Design Document

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1.Introduction

The purpose for this document is to describe the high-level design of the Data Source Explorer for the DTP Connectivity project.

2.Requirements

The Data Source Explorer (DSE) should:

- 1) Display a list of connection profile (CP) instances.
- 2) When a CP is connected...
 - a) Surface capabilities of the CP (via context and view menu contributions and toolbar contributions).
 - b) Display data source content (such as lists of stored procedures, functions, events, tables, etc. for a database).
- 3) Serve as a mediator for drag and drop calls:
 - a) Dragging within the DSE (from one profile to another)
 - b) Dragging from the DSE to an outside target (such as to a view or editor)
 - c) Dragging from an outside source to a target inside the DSE
- 4) Facilitate import and export of CP instances and driver instances
- 5) Be extensible to support non-database CP if required by other projects

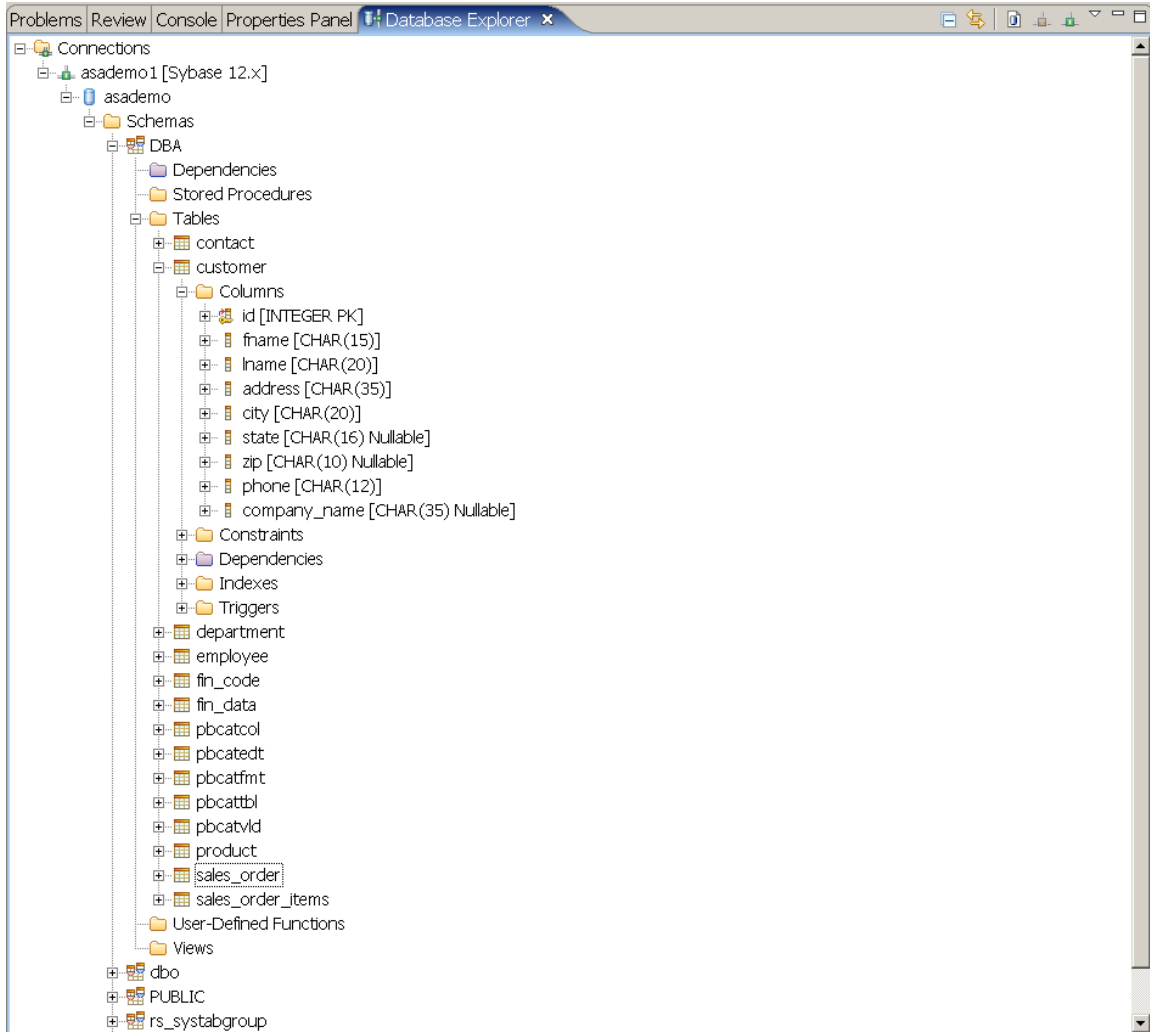
3.High-Level Design

3.1Background

3.1.1WST's Database Explorer

The current Database Explorer view that is contributed as part of the WST project provides a method of creating a connection to a database and displaying detailed information about that database. The screen shot below shows an example that is connected to a local Sybase ASA database.

DTP Connectivity: Data Source Explorer Design



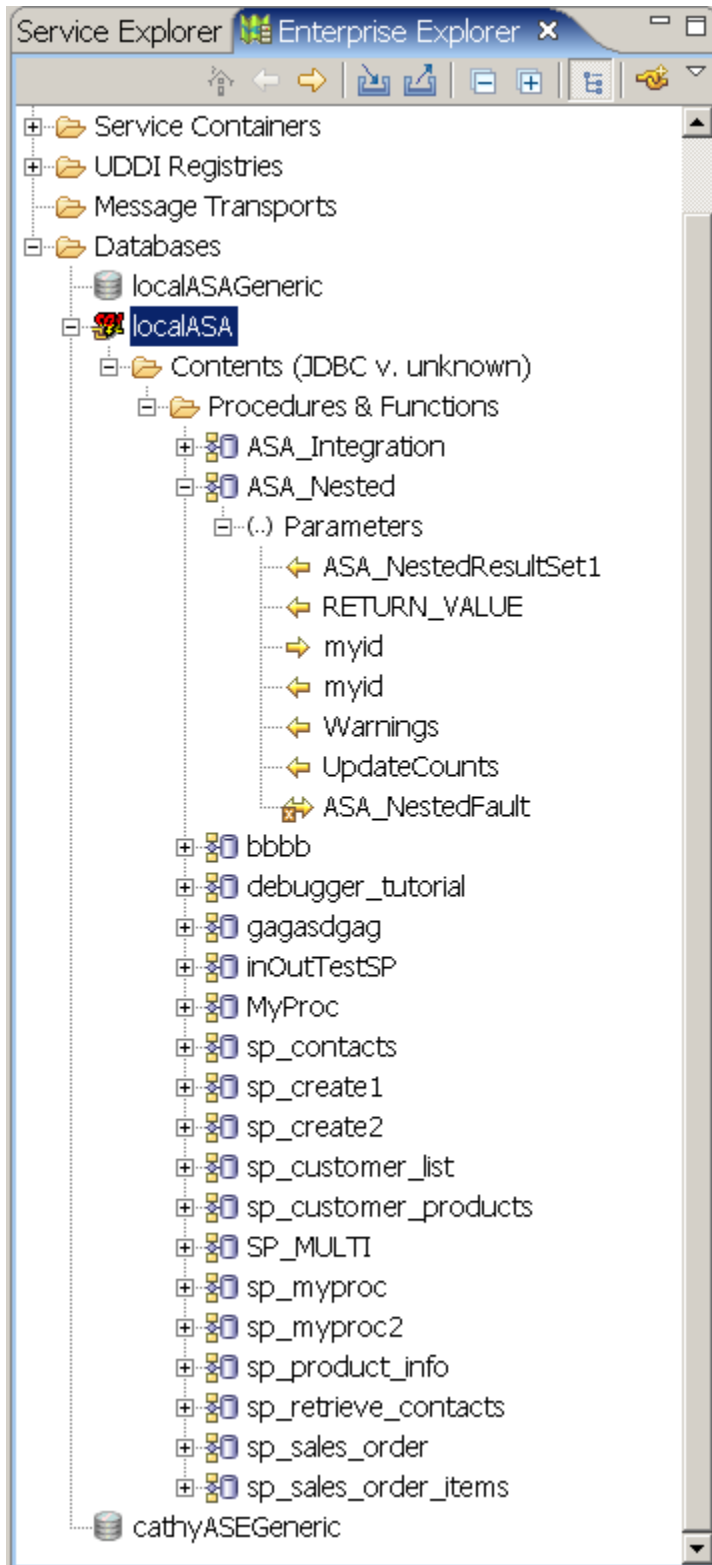
As you can see, the tree provides the following:

- A list of connections
- For each connected connection, it provides a list of databases
- For each database, it shows a list of schemas
- For each schema, it shows the following:
 - Dependencies
 - Stored Procedures
 - Tables
 - User-Defined Functions
 - Views
- For each table, it shows the following:
 - Columns

- Constraints
- Dependencies
- Indexes
- Triggers

3.1.2 Sybase WorkSpace's Enterprise Explorer

The Enterprise Explorer that is part of the Sybase WorkSpace product also provides a method for connecting to a database and retrieving a list of stored procedures. The screen shot below shows an example that is connected to a local Sybase ASA database. The following is representative of what the initial contribution for the Data Source Explorer was. It is intended that this contribution be updated to reflect the above requirements and to bring it in line with the capabilities of the WST Data Explorer.



As you can see, the tree provides the following:

- A list of categories

- A list of connection profiles for each category
- A list of available database connection profiles for the Databases category

For each JDBC profile, we provide:

- A list of databases available for a given profile connection (where available) (new to next version of Sybase WorkSpace)
- A list of database schemas available for a given database (new to next version of Sybase WorkSpace)
- A list of Stored Procedures & Functions for the connected profile
- A list of parameters for each exposed Stored Procedure & Function

Note: Though I suspect that the ability to inspect multiple databases in certain DBMS systems is supported by the SQL model (via extending the base database model), the old version of the Database Explorer from WTP requires you connect to a specific database and I can't determine if it is flexible enough to provide a list of databases and their resulting data trees. We will hold an additional meeting to determine if this support can be added, as Sybase ASE is not the only database that will need this functionality.

3.2 Data Source Explorer

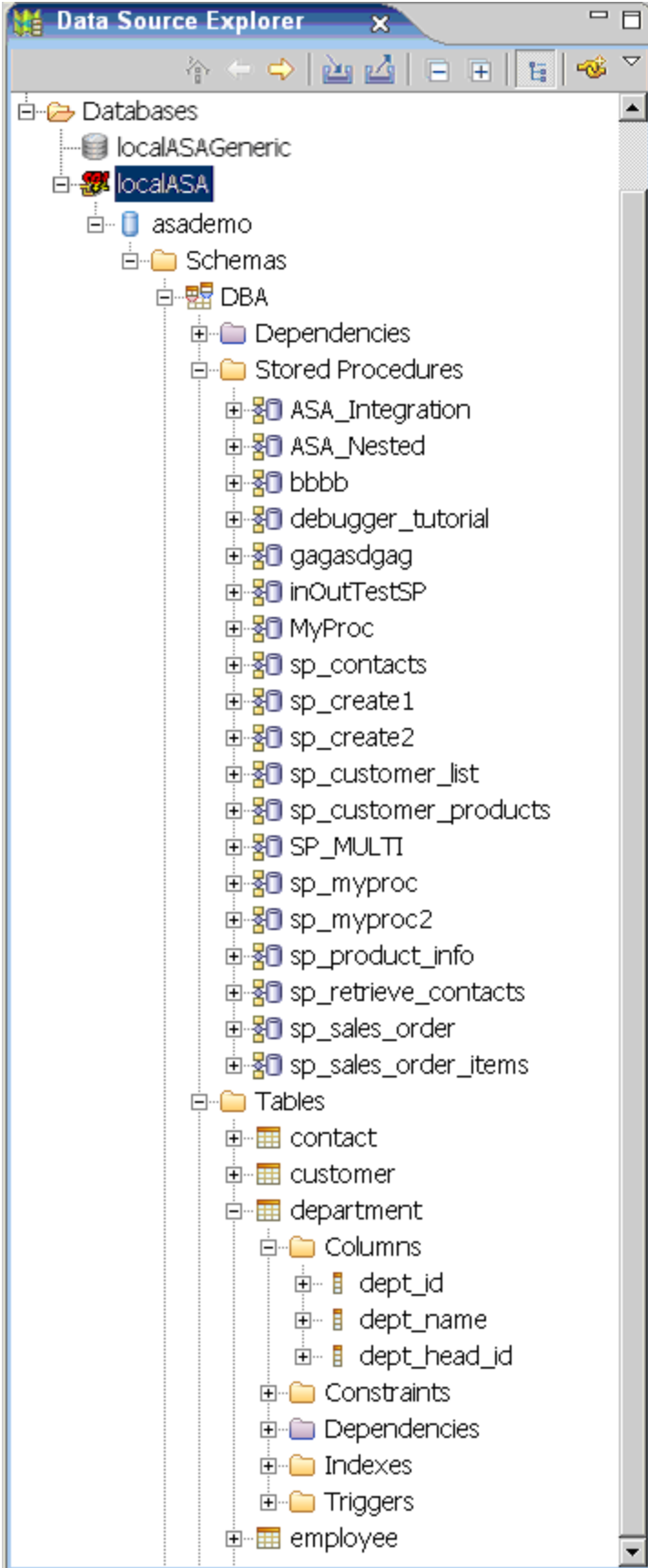
The Data Source Explorer is the main interface through which the user will be interacting with other components in the DTP Connectivity project. It will provide a method to create, maintain, and interact with connection profiles (just databases initially, though the framework can support other types of connections) in a single Eclipse view.

3.2.1 The Interface

The Data Source Explorer (DSE) will be composed of a single Eclipse view (accessible through the Window -> Show View menu or through a perspective that opens the view automatically). The view's tree will show a hierarchy of categories, connection profiles, and database/SQL model information.

Question: Are we supporting refactoring of model objects? For example, if a user wants to copy a table or stored procedure from one database to another, do we support this? If not, what sort of refactoring will we support?

A sample tree might look something like the following:



3.2.1.1 Node Types

The following node types would be important to the Data Source Explorer:

Node Type	Description
Category	Category of Connection Profile. May be a parent or child category, depending on depth.
Connection Profile	The Connection Profile itself.
Other Nodes	The Database & SQL model will contribute other nodes (as appropriate) such as databases, schemas, stored procedures, tables, etc.

3.2.2 Menu/Toolbar Actions

3.2.2.1 Menus

Node	Menu	Action
Category	New	Opens the New Connection Profile wizard.
Connection Profile	Connect	Connects to the database and populates the SQL/Database models.
	Disconnect	Disconnects from the database.
	Save Offline	Saves the SQL/Database models offline for use in disconnected mode.
	Refresh	Repopulates the SQL/Database models (while connected).
	Delete	Deletes the selected profile.
	Refresh	Refreshes the SQL/Database models from the connection or offline instance.
	Duplicate	Copies the connection profile and creates a new instance in the view.
	Rename	Allows renaming of the selected profile.
	Properties	Opens the Properties dialog for the selected profile.

3.2.2.2 Toolbar Actions

Button	Action
Home	If currently drilled-into the view at a particular level, this brings the user back to the top (root) level of the view.
Back	If currently drilled into the view at a level deeper than the root, this moves back up a level in the hierarchy.
Go Into	If a container node is selected (i.e. a category), this will drill into the hierarchy and make the selected node the root of the view.
Collapse All	Collapses all nodes in the view.
Export	Exports one or more profiles to a file.
Import	Imports one or more profiles from a file.
Show Categories Toggle	If set, the view will show a hierarchical view including categories and subcategories. If not set, the view will show a simple, flat list of profiles.
New Connection Profile	Opens the New Connection Profile wizard.

3.3 Dependencies

We will be dependent on the following components:

- WST Navigator Framework or Platform Extensible Navigator Framework
- SQL and Database Models
- Profile Framework

3.4 Tasks

- 1) Create new Data Source Explorer view based on either Platform or WTP extensible navigator.
 - a. Use the navigator framework to extend the Common Viewer.
 - b. Use the new Profile Management tools in DTP Connectivity to populate the content provider for the DSE.
 - c. Create a label provider for the DSE. (Does the Profile framework manage icons?)
 - d. Create a preference page for DSE preferences
- 2) Create a Generic JDBC profile
 - a. Use the navigator framework to contribute a node for each profile
- 3) Create a SQL/Database Model sub-profile

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- a. Use the navigator framework to contribute content from the Database/SQL models for a given connection
- 4) Create DSE actions
 - a. Create Connect/Disconnect actions for profile nodes (use the connection management tools available in Connectivity)
 - b. Create Save and Work Offline actions for profile nodes (use persistence features of SQL model)
 - c. Create a Properties action for profile nodes
 - d. Create a Refresh action for profile nodes
 - e. Create an Export action (export wizard with the option to export driver instances)
 - f. Create an Import action (import wizard with the option to process incoming driver instances (ignore/overwrite/rename/ignore all duplicates))
- 5) Create DSE filters
 - a. Create a filter that only shows database profiles
 - b. Create a filter that only shows profiles for a given driver
- 6) Create DSE drag/drop capabilities
 - a. What do we need to drag and drop?

3.4.1 Create new Data Source Explorer view based on either Platform or WTP extensible navigator.

Part	Dependency	Risks	Time to Complete (min/max)
Use the navigator framework to extend the Common Viewer.	WTP/DTP Navigator or Platform	Will the Platform extensible navigator be available in M3?	1 day/3 days
Use the new Profile Management tools in DTP Connectivity to populate the content provider for the DSE.	Connectivity Profile Framework	N/A	1 day/3 days
Create a label provider for the DSE. (Does the Profile framework manage icons?)	Connectivity Profile Framework	Icons	1 day/3 days
Create a preference page for DSE preferences	None	Unsure at this point what preferences this view will need	1 day/2 days

3.4.2 Create a Generic JDBC profile

Part	Dependency	Risks	Time to Complete (min/max)
Use the navigator framework to contribute a node for each profile	DSE	N/A	1 days/2 days
Integrate with SQL/Database Model sub-profile	DSE & SQL/DB Model sub profile	Understanding of the models	2 days/5 days

3.4.3 Create a SQL/Database Model sub-profile

Part	Dependency	Risks	Time to Complete (min/max)
Use the navigator framework to contribute content from the Database/SQL models for a given connection	DSE & SQL/DB Model sub profile	Understanding of the models	2 days/5 days

3.4.4 Create DSE actions

Part	Dependency	Risks	Time to Complete (min/max)
Create Connect/Disconnect actions for profile nodes (use the connection management tools available in Connectivity)	Connectivity Profile/ Connection Mgmt Framework	Availability of connection management tools	1 day/3 days
Create Save and Work Offline actions for profile nodes	SQL Model	Availability of model persistence tools	1 day/2 days
Create a Properties action for profile nodes	Connectivity Profile Framework	N/A	1 day/2 days

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Create a Refresh action for profile nodes	DSE	N/A	1 day/1 day
Create an Export action (export wizard with the option to export driver instances)	DSE	N/A	2 days/3 days
Create an Import action (import wizard with the option to process incoming driver instances (ignore/overwrite/rename/ignore all duplicates))	DSE	N/A	3 days/4 days

3.4.5 Create DSE filters

Part	Dependency	Risks	Time to Complete (min/max)
Create a filter that only shows database profiles (by category)	WTP/DTP Navigator or Platform and Connectivity Profile Framework	Filter capabilities in navigator framework	1 day/3 days
Create a filter that only shows profiles for a given driver	WTP/DTP Navigator or Platform and Connectivity Profile Framework and Driver Framework	Filter capabilities in navigator framework	1 day/3 days

3.4.6 Create DSE drag/drop capabilities

Part	Dependency	Risks	Time to Complete (min/max)
What do we need to drag and drop?	Unknown	Unknown quantity at this point	Unknown

3.5 Additional Notes

3.5.1 SQL Model Content/Label Providers

The SQL Model Content and Label providers will be made public so users have the ability to change them as necessary.

3.5.2 Common Components

The DSE will provide several common components that can be re-used and changed by DTP consumers. These include (more may be added):

- Control to facilitate gathering of profile properties
- New Connection Profile Wizard
- Common wizard page using the common control to gather profile properties
- Common wizard page to collect profile name/description
- Common property page to allow editing of profile name/description
- Common property page to allow editing of profile properties
- Generic dialog for connection profile selection
- Control to display profile tree in various contexts (property/preference/wizard pages, dialogs, etc.)
- Common JDBC connection factory and connection classes
- Common control to facilitate driver selection